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Chile's Pattern of Agricultural Production and Trade

by **PAUL L. GUEST***

Chile's foreign trade in agricultural products was modified considerably by World War II. With the termination of that conflict, further modifications probably will take place. In analyzing the situation, it becomes necessary to examine in some detail Chile's pattern of agricultural production and trade during recent years.

Physical Characteristics

Principally because of its narrowness, Chile is often thought of as a small country, whereas it is larger than any country in Europe, except Russia. Its 286,397 square miles [1] are strung out in a north-south direction for some 2,700 miles—the southern end being hundreds of miles farther south than any other nation in the world—with an average width of slightly more than 100 miles. The elevation ranges from sea level along the Pacific coast to the towering crest of the Andean Cordillera in the east, the maximum altitude of which is more than 4 miles. A lower coastal range of mountains hugs the Pacific, thereby forming a long central valley, where most of Chile's crop production takes place. Numerous rivers, none of which are navigable for any great distance, flow from the Andes to the ocean more or less at right angles to the long axis of the country.

Mainly because of climatic differences, in considering the agriculture of Chile one may divide the country somewhat arbitrarily into the following five zones: (1) Northern, (2) north central, (3) south central, (4) southern, and (5) austral (southernmost). (See fig. 1 for Provinces in each zone.) Of these five regions, the north central is the most important. The south central is a transition area between the north central and the southern zones. The austral's agricultural importance is based almost exclusively upon its sheep products.

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This study will appear in two parts. This issue includes a discussion of Chile's agricultural background and organization. The September issue will take up the principal crops, livestock production, and an evaluation of the country's foreign trade in agricultural commodities.

[1] Office of Population Research, Princeton University.

CLIMATE

Regarding climate, and also topography, Chile frequently is compared with the Pacific-coast area of North America, extending from Lower California in Mexico to the State of Washington. Lower California is somewhat similar to northern Chile, and western Washington is comparable to austral Chile. Beginning at the Peruvian-Chilean border in the north and progressing southward, the annual rainfall and relative humidity in general increase at farming elevations, whereas the mean annual temperature and the annual number of sunny days decrease. Rainfall varies from practically nothing in the northern desert area to as much as 200 inches per year in southern Chile, although in the crop-producing sections of the important central region the range is from about 14 to 70 inches per annum (fig. 1). Most of the rainfall occurs during the winter months, principally June to September, thus resulting in a long dry summer over much of the country.

Being south of the Equator, Chile's seasons are the reverse of those in the United States, and consequently, the agricultural year is from July 1 of one calendar year to June 30 of the next. Santiago (the capital) and a large part of the central valley enjoy a delightful subtropical climate similar to that of southern California. Extremely high or low temperatures in that area occur only infrequently at farming elevations, with the minimum only rarely being lower than 28° or 30° and the maximum seldom above 90° F., although the diurnal fluctuation is often great. Even in the ranching districts of the Magallanes area not far from Cape Horn the mean temperature in the coldest month (July) is from about 28° to 36° F., with little daily fluctuation from the mean being registered (*1*).[2]

The area from about Concepción in the south central zone to Puerto Montt, situated at the southern terminus of the central valley, usually experi-

[2] Italic numbers in parentheses refer to Literature Cited, which will appear in the September issue, following the second part of this study.

ences several severe rainstorms, accompanied by high wind, during the summer months. Often forming rather suddenly, the storms frequently cause considerable damage to crops.

SOILS

Soils over a large part of Chile have been formed to a great extent from outwash and alluvium from the Andes. Their depth in the long outwash plain comprising the western slope of the cordillera varies greatly, although over extensive areas they are rather shallow. Many are gravelly and coarse-textured, especially in the lower horizons, but red clays are common along the coastal range and in the southern part of the central valley.

Throughout somewhat more than the northern one-third of the country, that is between the Peruvian-Chilean border on the north and roughly Santiago on the south, soils are classed as aridic, with accumulations of calcium carbonate frequently being found in the B horizons, whereas from about Santiago southward, they are humid. For the most part, those in the northern zone are decidedly alkaline, in the north central zone slightly alkaline to neutral, in the south central zone neutral to slightly acid, and in the southern and austral zones, decidedly acid.

Erosion is serious in certain regions, especially in the south central and southern Provinces of Maule, Bío-Bío, Malleco, and Cautín. The Chilean Ministry of Agriculture is giving considerable attention to the matter and is attempting to work out means of solving the problem which is becoming more serious each year.

The Land and the People

LAND USE

In the crop year 1942–43, according to a recent study (*9*), 78,835,000 acres of land in Chile were classed as agricultural and forest which, for comparative purposes, is greater than the entire area of Italy, for instance. Of this figure, 48,240,000 acres, or 26.3 percent of the total area (183,291,000 acres), were agricultural, and 30,595,000 acres, representing 16.7 percent of the entire area of the country, were forest land. Thus, these two classifications account for 43 percent of the total area, which signifies that more than one-half of the land is considered useless for agricultural and forestry purposes. (Another source (*2*) estimates that forests and woodlands cover about 39,500,000 acres, or 22 percent, of the nation's surface.)

TABLE 1.—*Utilization of agricultural land in Chile, crop year 1942–43*

Land use [1]	Area	Percentage of total	Land use [1]	Area	Percentage of total
	1,000 acres	*Percent*		*1,000 acres*	*Percent*
Pasture and grazing land	43,188	89.5	Truck crops—Con.		
			Chickpeas	21	
Nonarable, native pasture and ranges	[2] 32,816		Other truck crops	2	
Arable, native pasture	7,159				
Tame pasture and hay crops	3,213		Vineyards	251	0.5
			Orchards	212	.4
Grains	2,287	4.8	Industrial crops	98	.2
			Hemp	[3] 50	
Wheat	1,846		Sunflower	25	
Oats	223		Flax	13	
Barley	122		Tobacco	6	
Rice	70		Broomcorn	2	
Rye	24		Peppers	1	
Birdseed	2		Other industrial crops	1	
Fallow	1,553	3.2			
Truck crops	607	1.3	Vegetables	44	.1
			Total agricultural land	48,240	100.0
Beans	209				
Corn	142		Less nonarable (pasture) land	[4] 32,816	68.0
Potatoes	133		Total arable land (1942–43)	15,424	32.0
Peas	73				
Lentils	27				

[1] Essentially the classification as used by the Ministry of Agriculture.
[2] Almost one-half of this area was located in the austral Provinces of Magallanes and Aysén.
[3] Abnormally high; area usually is about one-third this figure.
[4] It is said that, with preparation, some of this land could be made arable.

Source: PLAN AGRARIO (*9*).

Agricultural Land.—Almost nine-tenths of the agricultural land was in pasture and ranges in 1942–43 (table 1), whereas grains, truck crops, vineyards, orchards, and industrial crops collectively accounted for only 7.3 percent of the total. About one-half, or 16,061,500 acres, of the nonarable, native pasture and range land was located in the austral Provinces of Magallanes and Aysén. The arable land, embracing less than one-third of all agricultural land that year, was divided (fig. 2) as follows (*9*):

Land use	*Area crop year 1942–43, 1,000 acres*	*Percentage of total arable land, percent*
Pasture	10,373	67.2
Native pasture	7,160	
Tame pasture and hay crops	3,213	
Annual and other crops	3,036	19.7
Fallow	1,553	10.1
Vineyards and orchards	462	3.0
Total arable land in 1942–43	15,424	100.0

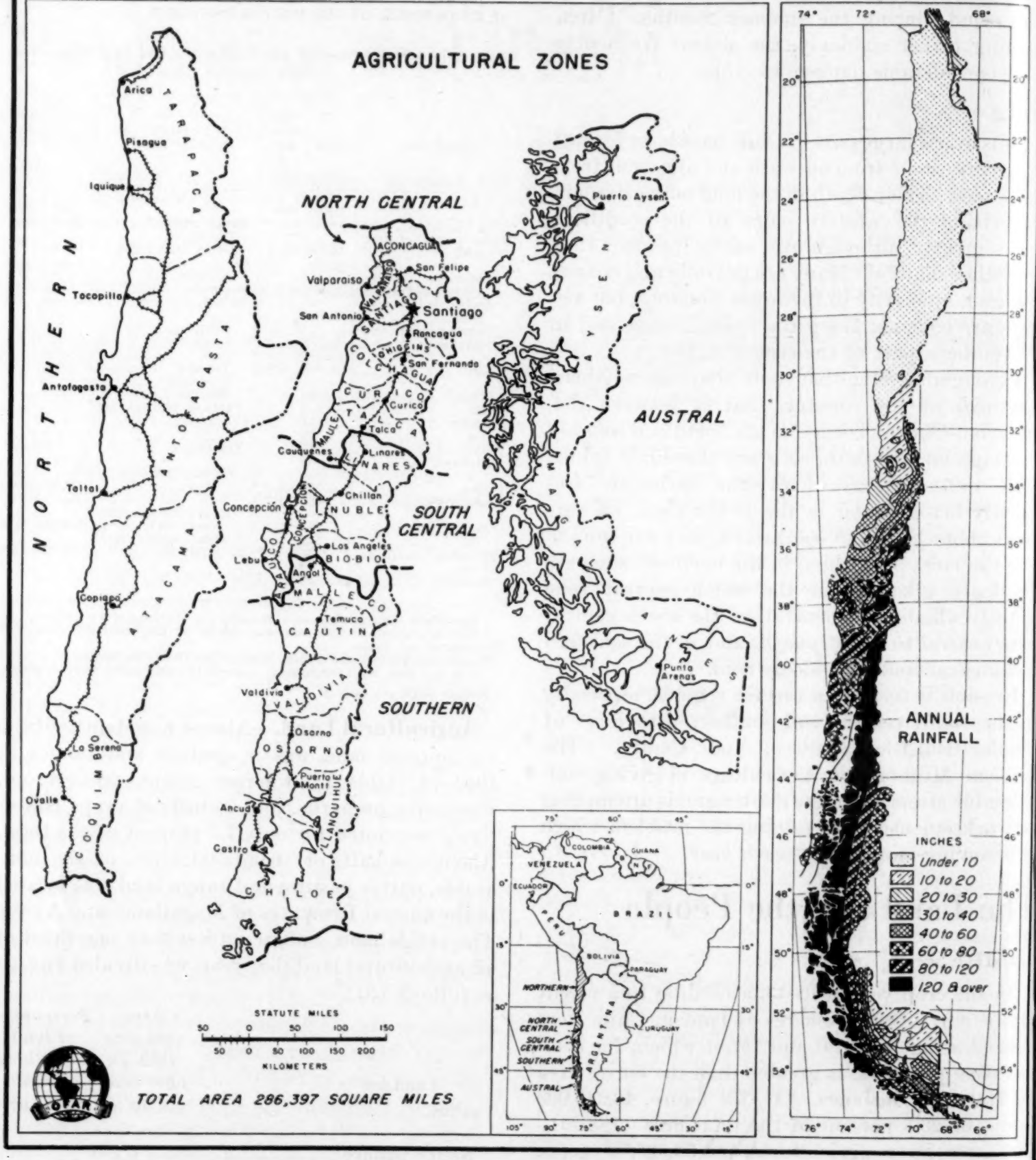

FIGURE 1.—Agricultural zones and annual rainfall of Chile.

Northern Zone (Tarapacá to Coquimbo Province, incl.).
CLIMATE—Desert; av. annual rainfall less than 4 in. over most of zone; high daily temperatures.
SOILS—Aridic; decidedly alkaline.
LAND DISTRIBUTION (1942–43):—
40% of total area of Chile. 8% of all agricultural land. 2% of all arable land. 9% of all irrigated land.
PRINCIPAL CROPS—Durum wheat, potatoes, grapes, dried fruit, olives, papayas, cherimoyas, truck crops, flaxseed. Farming confined largely to narrow irrigated valleys.
PRINCIPAL LIVESTOCK & PRODUCTS—Chief goat region; cattle, dairy products, and sheep also important.

North Central Zone (Aconcagua to Maule Province, incl.).

CLIMATE—Semiarid, subtropical; resembles California. Rainfall greater than in northern zone; cooler.

SOILS—Slightly alkaline to neutral.

LAND DISTRIBUTION (1942–43):—

9% of total area of Chile. 21% of all agricultural land. 20% of all arable land. 49% of all irrigated land.

PRINCIPAL CROPS—Chief region for durum wheat, barley, rice, dry edible beans, chickpeas, wine, hemp fiber and hempseed, grapes, sunflower seed, and tobacco. Also important: Soft wheat, lentils, potatoes, flaxseed, apples, pears, peaches, oranges, lemons, avocados, olives, figs, and truck crops.

PRINCIPAL LIVESTOCK & PRODUCTS—Cattle, dairy products, sheep and wool, hogs, and goats.

South Central Zone (Linares to Bío-Bío Province, incl.).

CLIMATE—Subtropical to temperate. Rainfall is greater than in north central zone; temperature slightly lower.

SOILS—Neutral to slightly acid.

LAND DISTRIBUTION (1942–43):—

6% of total area of Chile. 17% of all agricultural land. 36% of all arable land. 38% of all irrigated land.

PRINCIPAL CROPS & FOREST PRODUCTS—Soft wheat, barley, oats, rice, dry edible beans and peas, lentils, chickpeas, potatoes, wine grapes, apples, pears, and other fruit. Forest products from planted forests.

PRINCIPAL LIVESTOCK & PRODUCTS—Cattle, dairy products, sheep and wool, hogs, goats.

Southern Zone (Malleco to Chiloé Province, incl.).

CLIMATE—Temperate; rainfall (av. 60–120 in. per year) greater than in south central zone; slightly cooler.

SOILS—Acid.

LAND DISTRIBUTION (1942–43):—

14% of total area of Chile. 21% of all agricultural land. 41% of all arable land. 4% of all irrigated land.

PRINCIPAL CROPS & FOREST PRODUCTS—Main zone for soft wheat, oats, dry field peas, potatoes, and fiber flax. Also important: Lentils, chickpeas, apples, and other fruit. Chief saw-timber and forest area.

PRINCIPAL LIVESTOCK & PRODUCTS—Main cattle, dairy-products, and hog region. Also important: Sheep, wool, and goats.

Austral Zone (Aysén and Magallanes Provinces).

CLIMATE—Temperate. Rainfall greater, except Punta Arenas area, and temperature lower than southern zone.

SOILS—Acid.

LAND DISTRIBUTION (1942–43):—

31% of total area of Chile. 33% of all agricultural land. 0.4% of all arable land. Only a trace of irrigated land.

PRINCIPAL CROPS & FOREST PRODUCTS—Crop production very limited; vast ranges for grazing. Extensive woodlands.

PRINCIPAL LIVESTOCK & PRODUCTS—Chief region for sheep, frozen lamb and mutton, wool, and lambskins.

An interesting point is that, whereas only 30 percent of the total area of Chile is embraced by the north central, south central, and southern zones, these zones contained 97 percent of the total arable land in the country in 1942–43 (table 2).

The great importance of grains in Chile's land-use pattern is illustrated by the following data and fig. 3, which show the distribution of land devoted to annual crops in 1942–43 (classification of PLAN AGRARIO (*9*) followed):

Land use	*Area in annual crops, 1942–43, 1,000 acres*	*Percentage of total, percent*
Grains (see table 1 for specific crops)	2,287	75.3
Truck crops (see table 1 for specific crops)	607	20.0
Industrial crops (see table 1 for specific crops)	97	3.2
Vegetables	44	1.5
Total in annual crops	3,035	100.0

Irrigation plays an important part in crop production in Chile. According to a recent estimate for the agricultural year 1942–43, some 2,957,000 acres, or almost one-fifth of the total land classed as arable that year, were under irrigation (table 2), whereas in the United States, for example, in 1940 only about one-twentieth of the arable land was irrigated. Irrigation in Chile is concentrated principally in the north and south central zones, which together accounted for 87 percent of the total irrigated acreage in 1942–43. Over one-half of the irrigated land is estimated to be in pasture and about one-fourth in grains, principally wheat, with smaller amounts in truck crops, orchards, vineyards, etc. (table 3 and fig. 4).

TABLE 2.—*Distribution of total area, agricultural land, arable land, and irrigated land in Chile, by zones, crop year 1942–43*

Zone [1]	Area		Agricultural land		Arable land, 1942–43		Irrigated land	
	Acreage	Percentage of total	Acreage	Percentage of total	Acreage	Percentage of total	Acreage	Percentage of total
	1,000 acres	*Percent*	*1,000 acres*	*Percent*	*1,000 acres*	*Percent*	*1,000 acres*	*Percent*
Northern	73,666	40.2	3,905	8.1	337	2.2	268	9.1
North central	17,047	9.2	9,986	20.7	3,136	20.3	1,451	49.1
South central	11,549	6.3	8,304	17.2	5,584	36.2	1,119	37.8
Southern	25,579	14.0	9,915	20.6	6,269	40.9	119	4.0
Austral	55,450	30.3	16,130	33.4	68	.4	(2)	------
Total Chile	183,291	100.0	[3]48,240	100.0	15,424	100.0	2,957	100.0

[1] See fig. 1 for Provinces included in each zone.
[2] Less than 500 acres.
[3] It is said that, with preparation, more of this land could be made arable.
Source: PLAN AGRARIO (*9*). See *Anexo* 4.

Forest Land.—Although about three-fourths of Chile's 30,595,000 acres of forest land in the agricultural year 1942–43 was located in the three

austral and southern Provinces of Magallanes, Aysén, and Chiloé, every Province in the country has some forests and woodlands. In fact, most of the volume of timber is found in the southern-zone Provinces north of Chiloé. Of the total forest area, 398,000 acres were planted forests and the balance, natural forests. About one-half of the area of the former was found in four south central and southern Provinces: Concepción, Bío-Bío, Cautín, and Valdivia (*2, 9*).

TABLE 3.—*Approximate use of irrigated land in Chile*

Land use [1]	Area irrigated [2]	Percentage of total	Land use [1]	Area irrigated [2]	Percentage of total
	1,000 acres	*Percent*		*1,000 acres*	*Percent*
Pasture	1,526	50.9	Truck crops—Con.		
Native	952		Potatoes	63	
Tame and in hay crops	574		Peas	4	
Grains	723	24.2	Orchards and vineyards	240	8.0
Wheat and rye	520		Industrial crops	61	2.0
Barley	102		Sunflower	34	
Rice	90		Hemp and flax	27	
Oats and birdseed	11		Vegetables	49	1.6
Truck crops	398	13.3	Total	[3] 2,997	100.0
Beans	203				
Corn	128				

[1] Same classification as used by the Ministry of Agriculture.
[2] The area data are approximations only; some refer to the crop year 1935–36, others to 1942–43 and 1943–44.
[3] This total does not agree exactly with the total shown in table 2 because of using different sources of information.

Source: PLAN AGRARIO (*9, p. 33*).

SIZE OF FARMS

Those who have studied the situation recognize that in general Chilean farms are either extremely large or very small. The amount of agricultural land embraced by moderate-size holdings is thought to be increasing, whereas both of the other categories are decreasing. Recent reliable statistics on this subject are rather limited; but, as shown in the agricultural census of 1935–36, 43 percent of the total number of farms were less than 12 acres in area at that time, and 0.3 percent were 12,000 acres or more (*4*). However, the former group accounted for only 0.5 percent of the total rural area, whereas the latter embraced more than 52 percent. In many instances, the large holdings consist to a great extent of nonagricultural land and in a few cases to extensive sheep ranges, etc., in Chiloé, Aysén, and Magallanes. Nevertheless, a recent study points out that, even eliminating those three Provinces, only 0.7 percent of the number of farms throughout the rest of Chile embrace 20 percent of all the agricultural land (*9*). In considering the matter of agrarian reform, the question of land distribution has been given no small amount of attention in recent years (*12*).

In some instances, holdings are too small to be operated profitably as independent economic units, and a law now prohibits the subdividing of farms into parcels less than 37 acres in area.

AGRICULTURAL PEOPLE

More people are engaged in and dependent upon agriculture for their livelihood in Chile than upon any other one activity. According to the 1940 census, the population at that time totaled 5,023,500, of which 1,927,000, or 38.4 percent, were classed as agricultural. Of this latter number, 609,000 were listed as actually being engaged in agriculture, with the balance being members of families, etc. (*9*). However, the percentage of agricultural population has been decreasing for several decades, and the decline is believed to have been accelerated since 1940 because of wartime shifts in employment.

Chilean farm laborers do not receive a high daily income based upon standards in the United States. In 1943, for example, the average daily cash wage paid to permanent farm workers (*inquilinos*) for days actually worked varied from a minimum of about 4.1 pesos (13.5 cents) in the northern zone to a maximum of some 9.4 pesos (31 cents) in the southern zone, exclusive of sheep ranches in Magallanes. Houses, farm land, food rations, and other benefits ranged from the cash equivalent of about 14.7 to 22.3 pesos (49 to 74 cents) per day worked, depending upon the region of the country. The total average income from cash and benefits per day worked in 1943 varied from a minimum of 21.4 pesos (71 cents) in several south central Provinces to a maximum of 31.0 pesos ($1.02) in the southern zone.[3] The average total number of days worked per laborer during the year decreased steadily from north to south, being 265 days in the northern and only 180 in the southern zone (*5, p. 195*). Hence, total yearly earnings are not high. This low annual income of farm workers in many cases provides families of such laborers with an extremely low level of living, but the Government has been trying to remedy this situation, particularly in recent years.

[3] Peso conversions calculated on the basis of 3.3 U. S. cents per peso.

Farm Income.—Figures are not available on the farm value of Chile's total annual crop and livestock production. Rough estimates for the calendar year 1943 place total returns to growers for 18 items in the following decreasing order of importance—wheat, cattle, wine, potatoes, hogs, beans, sheep, rice, wool, barley, corn, oats, peas, lentils, chickpeas, tobacco, rye, and birdseed—at about 135 million dollars, which was more than 69 percent greater than in 1940 (*7*). This large increase resulted almost entirely from an upswing in the price of agricultural products rather than to stepped-up production. Reliable published data on the distribution of sales of agricultural products on a per farm basis, or which pertain to the farm-income situation of Chilean farmers, are lacking.

Agricultural Influence.—Throughout Chile's history, farm owners—particularly the larger landholders—have exercised a great deal of influence in the political, social, and economic affairs of the nation. In fact, except for a few brief periods, they were more or less the dominant force in the country until possibly a decade or two ago. In recent times, however, their position has given way to an appreciable extent to industrial interests, in keeping with Chile's growing importance as an industrial nation. Nevertheless, except in the cities of Santiago, Valparaíso, Concepción, and certain localized mining centers, agriculture is still of major importance in the life of the people.

Government Agencies and Agriculture

For about a century after Chile declared its independence, in 1810, the Government made relatively little effort to exercise any control over, regulate, or otherwise take an active part in the agricultural affairs of the nation. This situation is quite different now, however, as a number of Government agencies dealing with agriculture have been created in recent times, especially during the past two decades. These are not united in any single administrative entity but for the most part function largely as independent or semi-independent agencies. Some are a part of the Ministry of Agriculture, others of the Ministry of Economy and Commerce; still others are connected with the Ministry of Colonization and Lands.

The Ministry of Agriculture consists of several subdivisions, one of the most important of which

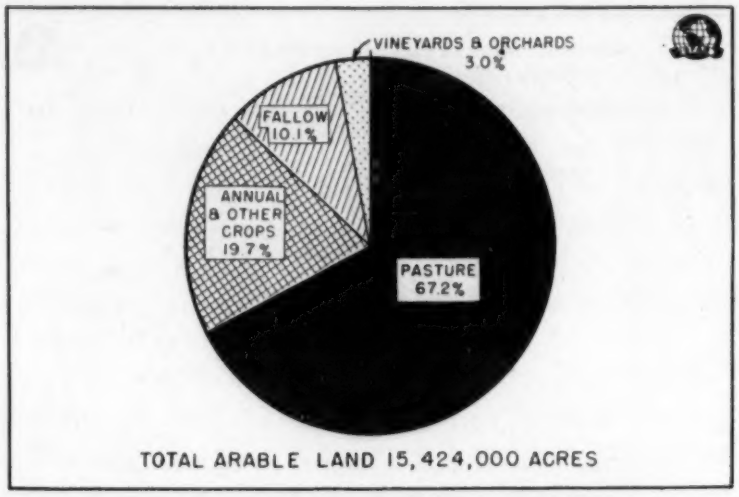

FIGURE 2.—Utilization of arable land in Chile.

is the *Dirección General de Agricultura*. It performs functions somewhat similar to those of the Agricultural Research Administration and the Extension Service in the United States Department of Agriculture. It also prepares crop forecasts and does other work of an economic nature. Most of the latter, however, is carried on by the Government's important Institute of Agricultural Economy, which makes cost studies, sets prices of certain agricultural commodities, buys wheat, determines the domestic requirements and exportable surplus of agricultural products, and otherwise exercises considerable regulatory authority over a number of economic aspects of Chilean agriculture. The Commissariat of Subsistence and Prices in the Ministry of Economy and Commerce fixes the price of many foodstuffs in conjunction with the Institute. Actual permission to export or import agricultural, as well as all other, commodities, including payment for imports, is controlled by the *Consejo Nacional de Comercio Exterior*.

Short-term and intermediate credit is available to farmers through the Government's Agricultural Credit Bank (*Caja de Crédito Agrario*) which was established in 1926 and now has a capital of 520 million pesos ($16,100,000). Intermediate credit can also be obtained from the Agricultural Department of the semigovernmental Fomento Corporation (*Corporación de Fomento de la Producción*) formed in 1939. The Department is interested in bringing about an expansion in the production of oilseeds, dairy products, and other agricultural commodities, as well as in generally improving agriculture.

The Agricultural Colonization Agency, created in 1928, forms colonies of small, independent farmers, frequently on land which at one time or another

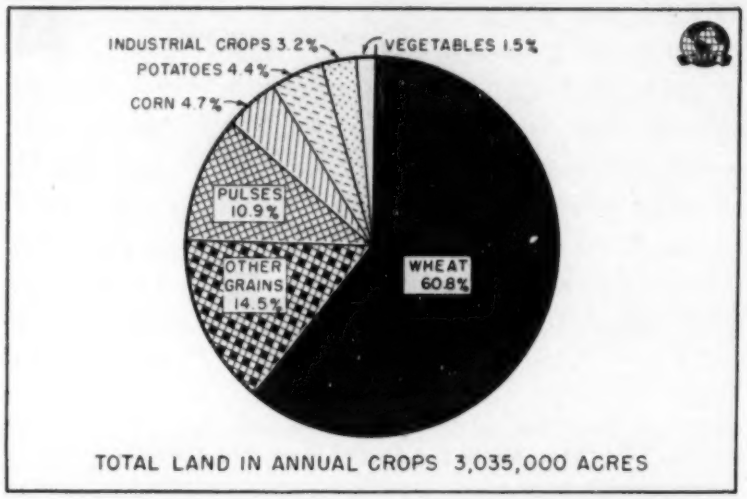

FIGURE 3.—Utilization of land in annual crops in Chile.

belonged to some large estate. The agency provides a certain amount of technical guidance to the farmers but leaves management and operation of the properties, except in the case of a few collective farms, to the individual farmer. This agency and also the Forest Department are part of the Ministry of Colonization and Lands. Occasionally this Ministry and the Ministry of Agriculture are headed simultaneously by the same cabinet minister.

The National Agricultural Society, a private organization, for more than a century has exercised a great deal of influence not only in the agricultural affairs of Chile but in many other sectors of the nation's life as well. Composed principally of the larger landowners, the Society maintains an extensive agricultural experiment station; has a modern biological laboratory for the preparation of vaccines, serums, etc.; and carries on certain activities undertaken by the State in other countries.[4]

General Farm Practices

The new and the old, efficiency and inefficiency, are seen in Chilean farm-operation practices; but, in general, methods are considerably more advanced than in many other parts of the world. On the one hand, there are those who follow the most modern farm practices; on the other, there are some who cling to the concepts of several generations ago. Costs of production of many agricultural products are considered to be high, especially in comparison with neighboring Argentina. The Chilean Government especially, however, is making a great effort to bring about improvements in all phases of agricultural activity.

[4] For more detailed discussion of the agencies, see (*13*).

IRRIGATION

As pointed out in a previous section, about one-fifth of the land classed as arable in 1942–43 is under irrigation, compared with only 5 percent in the United States; this indicates the great importance of irrigation in Chilean agriculture. The practice is believed to have been introduced by the Incas into the north central part of the country about 500 years ago.

For the most part water is obtained by gravity flow through canals directly from snow-fed rivers originating in the Andes. The principal river systems from north to south are the Aconcagua, Maipo, Cachapoal, Mataquito, Maule, Itata, and the Bío-Bío. Simple, semipermanent diversion dams are built into the river upstream, and because most of central Chile is on a slope the water runs easily to field outlets. Possibly owing in part to the ease and cheapness with which water is obtained and its usual abundance, irrigation practices, such as preparation of the land, application of the water, etc., are not so advanced or so efficient in general as they might be. Water is applied mainly by flooding from field ditches, by basin flooding, or through furrows in the case of row crops and some orchards.

Almost all canals, some of which extend for miles, have been built by private farm owners or groups of owners. Only during the last quarter century has the Government built several large impounding dams for irrigation in the northern zone and otherwise taken an active interest in the matter. At present, however, it has extensive plans for constructing additional dams and, hence, will probably bring more land under irrigation.

USE OF FERTILIZERS

Yearly records kept since 1910 show that the average yield per acre of many of Chile's principal annual crops, such as wheat, barley, oats, corn, beans, peas, chickpeas, etc., has been decreasing rather steadily since that year. This trend is thought by many to be the result principally of faulty soil-management practices and erosion, and in recent years more publicity and attention have been given to the use of fertilizers. Fertilizer consumption about tripled during the decade 1934–44, most of the increase being in lime and phosphate fertilizers. Present consumption is estimated at

some 220,000 short tons annually, all of which is produced domestically, for no imports have been reported since 1940 (*9*).

One Chilean nitrate organization has maintained an agricultural field service for a number of years, with representatives stationed at key points throughout the country. As a result of this service, the use of nitrate fertilizer has increased greatly, especially since about 1937–38. In some areas the standard practice now is to fertilize certain crops every year, and possibly at least a small acreage of each crop produced is fertilized in some part of the country. Some reports indicate that, from a crop-production viewpoint, Chilean farmers could use advantageously at least five or six times the present annual consumption; therefore, the total national consumption seems likely to continue to expand. The method, time, and rate of fertilizer applications for different crops follow much the same patterns as those in the United States, with similar problems encountered.

USE OF FARM MACHINERY

Although great interest in mechanization of agriculture has been manifested during the past decade, largely as a result of the war the volume of farm machinery actually imported has been relatively small. As an indication of the amount of agricultural equipment in Chile, estimates for 1944, for example, reveal that among many other items there were 5,539 grain threshers, 3,882 tractors, 2,748 hay balers, 237 spray rigs, and 218 ensilage cutters (*9*). In farm hauling operations, the ox-drawn two-wheeled cart is still widely employed; in fact, on most farms oxen are still the source of power where pulling is required.

Mechanization of field operations is particularly important in the south central and southern zones because of frequency of rains and general fickleness of the weather. The adage about "making hay while the sun shines" applies especially well to this area, because weather favorable for any one particular operation often is of comparatively short duration. Timeliness is therefore an essential factor, whereas in the north central and northern zones a few days more or less are usually not so important, except in the case of planting on nonirrigated land following winter rains.

The Government, principally through the Fomento Corporation, has plans for increasing the use of farm machinery, and a large volume will probably be imported during the next few years.

PEST CONTROL AND QUARANTINE

The Ministry of Agriculture maintains a corps of plant- and animal-quarantine inspectors, with men stationed at numerous towns, as well as at ports and other points of entry. The inspector reports periodically on the pest situation in his area, advises farmers, and also directly assists in bringing about the control of insects and diseases when such service is requested.

The standard practice for fruit growers is to spray or dust as the need arises, but the Government in the past few years has been giving considerable attention to biological control of insects. In this latter connection, a modern insectary for rearing beneficial insects has recently been built by the Government at Quillota, between Santiago and Valparaíso. Seed-borne diseases of grain are controlled by standard treatments the same as elsewhere. However, in comparison with many other nations, Chile is relatively free of serious crop pests, and the average crop producer's annual pest-control bill is not high.

Foot-and-mouth disease, Bang's disease, tuberculosis, sheep scab, and hog cholera probably are the most important livestock diseases, but preventive or curative preparations are available for those mentioned, except tuberculosis. From the point of view of value of animals lost and difficulties of control, possibly the first-mentioned disease is the most serious.

CROP ROTATION

The concept of a definite crop-rotation system had been accepted and put into practice by Chilean farmers only to a limited extent until the last

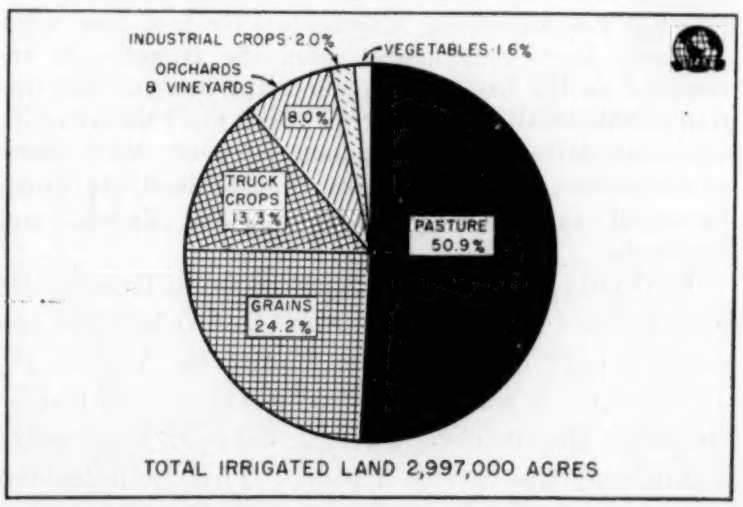

FIGURE 4.—Approximate utilization of irrigated land in Chile.

two or three decades, and this mainly in the north central zone. Fallowing is universally practiced, and in the crop year 1942–43, for example, one-third of all the arable land not in pasture, vineyards, and orchards was in fallow. Many wheat farmers in the south central and southern zones summer-fallow and then plant wheat. A suggestion has been made that this be followed by 2 years of hay or pasture crops, such as the recently introduced crimson clover. Some farmers are now omitting the fallow and plan to have from 2 to 4 years of clover before planting wheat again. Experimentation and extension work in crop rotation are being carried on by the Ministry of Agriculture and undoubtedly, as experience is gained, definite rotations will be adopted on a much wider scale than at present.

MARKETING

One of the major aspects of the marketing of farm products in Chile (except wool and mutton from the Magallanes area) either for domestic consumption or sale abroad, involves the shipment of such commodities principally to three cities: Santiago, Valparaíso, and Concepción. Movement is almost entirely by rail, since the north central, south central, and southern zones are served by a good north-south railroad, with many branch feeder lines extending both eastward to the Andes and westward to the Pacific coast. Relatively little hauling of agricultural products is done by truck, except in the case of wine. All-weather roads are few, and feeder roads of this type to railheads and to the more important cities and towns are needed, especially in the south central and southern zones.

At present there are about 11 cooperative dairies and some 25 other agricultural cooperatives for marketing a wide variety of farm products that are organized under the terms of the Cooperatives' Act (Law No. 4531) of January 14, 1929. Most of the selling of farm produce, however, is done through private buyers, or brokers, although in recent years the Government has been in the field as a buyer for much of the annual wheat crop.

Cold-storage facilities are limited, but the advantage of having more available to both producers and consumers of foodstuffs is widely recognized. The Government plans to assist in expanding present facilities, and probably in a few years the cold-storage capacity for meat, fruit, eggs, etc., will be much greater.

Agricultural Ruthenia

by **F. S. STRAUS***

The end of World War II has brought with it a realinement of territories, especially in eastern European countries. Ruthenia, the easternmost Province of Czechoslovakia, was transferred to Russia. An evaluation of what this transfer did to the parties involved, whether Russia gained, Czechoslovakia lost, and what Ruthenia itself may expect from the transfer, is attempted on the basis of a general and analytic description of this small, largely agricultural, and relative to its economic pattern densely populated land. With some qualifications, the realinement appears likely to prove beneficial to all three—Czechoslovakia, Russia, and Ruthenia.

Ruthenia, also called Subcarpathian Russia, the easternmost section of prewar Czechoslovakia, became a part of the Soviet Union on August 16, 1945, when it was joined to the Ukrainian Soviet Socialist Republic by a treaty between Czechoslovakia and the Soviet Union. This little-known country was thus brought into the limelight for a short moment just as it had been in 1918 and 1938, when European countries were reshuffled.

*Office of Foreign Agricultural Relations.

The Land

A small country of 4,872 square miles, Ruthenia is comparable in area to the State of Connecticut (4,965 square miles), but it has less than half (798,000 in 1936) of the latter's population. This roughly triangular appendage of prewar Czechoslovakia represented 9 percent of Czechoslovakia's total area and contained 5.3 percent of its population (1936), being the smallest and least densely populated (164 per square mile against 280 in prewar Czechoslovakia) of the four Provinces.

Ruthenia borders with its 30- to 38-mile-wide base on Slovakia to the west, whence it stretches eastward for a distance of 125 miles. To the north the ridge of the Carpathian Mountain Range forms its only natural frontier, with the former Polish Provinces now incorporated in the Ukrain-

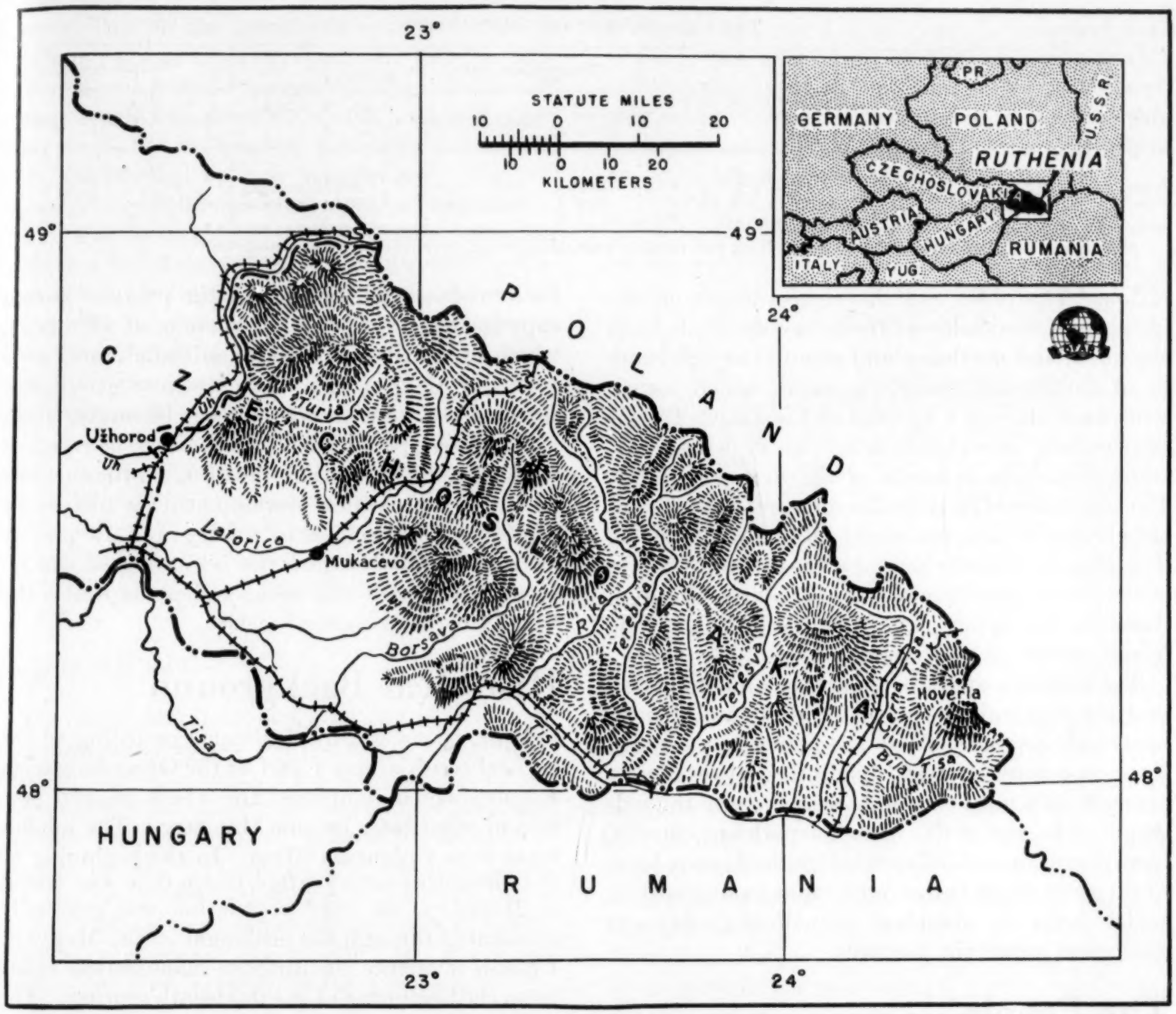

FIGURE 1.—Reference map of Ruthenia.

ian SSR. To the southeast and south, Ruthenia borders on Rumania and Hungary along a line defined by the Treaties of Trianon and Sèvres in 1920. Ruthenia's major assets are its forests, which cover the mountain slopes with beech on the lower and conifers on the higher levels; its pastures on the mountain saddles; its fertile valleys; and the fertility of its plain. Apart from large salt deposits, it has no important mineral resources.

Much of Ruthenia, about two-thirds, is mountainous. The northern part is covered by a range of the Carpathians, mountains of medium height, which rise from about 4,250 feet in the west to above 6,500 feet in the Cerna Hora to the east (Hoverla 6,730 feet) and present to the observer a view of gently rounded contours. They are made up of sandstone and to the east also of primary rock. The southern edge of the highland consists of volcanic rocks, which were brought to the surface in the faulting and sinking process that gave rise to the Hungarian plain. These eruptive formations never rise above 5,250 feet. Often they form isolated hills whose strategic value in a lowland is proved by the ruined fortresses on their summits. Deep valleys cut across the mountains. Their rivers—Uh, Latorica, Borsava, Rika, Tereblia, Teresva, and Black Tisa—flow southward into the Hungarian low plain, a strip of which belongs to Ruthenia, where the Tisa flowing from east to west gathers their waters.

The climate of the Carpathians is characterized by cool summers, cold winters, and copious precipi-

TABLE 1.—*Climatic data of Ruthenia*

Station	Length of record	Altitude	Latitude	Temperature (Fahr.)			Precipitation (av. ann.)	Killing frost	Number of days		
				Average yearly	Max.	Min.			Rainy	Snowy	Frostless
	Years						*Inches*				
Jasina	7	2175′	48°16′ N.	43.2°	77.2°	−10.0°	38.3	Sept.–May	201	57	127
Bustino	7	659′	48°02′ N.	47.8°	91.4°	−5.1°	33.4	Oct.–Apr.	141	14	173

NUTTONSON, M. Y. CLIMATOLOGY OF CZECHOSLOVAKIA AND ITS CLIMATE PARALLELS IN THE UNITED STATES. Washington. 1945.

tation. The plain and the river valleys, on the other hand, are sheltered from the cold winds from the north and northeast and receive the full benefit of moist southwesterly currents, which permit field work during 8 months of the year. This is particularly remarkable in a country whose latitudinal position is north of the State of Maine. In these favored sections the summers are hot, and the climate is ideal for cereal and vine cultivation. The greatest climatic hazard is the danger of floods, still critical despite attempts at control through dams in the upper valleys and dikes along the lower courses of the rivers.

The best soils of Ruthenia are the alluvial marsh and meadow soils in the river valleys and depressions to the south. These are joined to the north by rust-colored forest (podsolic) types interspersed with mild clay soils, which cover the volcanic rocks and tuffs. The Carpathians, finally, have mountain soils of mostly light and sandy loam of no great depth but very resistant to weathering, which favor the abundant growth of forests and give good mountain pastures.

The People

Ruthenia has a considerably mixed population, the result of its position as a wedge between five large countries. Of a total population of 694,000 in 1930, 62.2 percent indicated their ethnic nationality as Little Russian, Ukrainian, Ruthenian or Carpatho-Russian; 16 percent were Magyar; 13.1 percent Jews; 4.8 percent Czechs and Slovaks; 1.9 percent Germans; 1.8 percent Rumanians; the remainder were Gypsies, Poles, and Yugoslavs. The diversity of nationalities is equaled by an almost like number of languages spoken and a wide variety of religious faiths.

Two-thirds (66.3 percent) of the population are engaged in agriculture, fishing, and forestry as against 34.6 percent in the whole of Czechoslovakia. Only 11.9 percent (34.9 percent in Czechoslovakia) find their livelihood in industry. The backwardness and poverty of the population find expression in the high proportion of illiterates, which exceeds 30 percent for all inhabitants over 10 years of age. The major ethnic group, the Ruthenians, were over 40 percent illiterate.

Ruthenia's primitive conditions are the result of its geographical location, far off from the currents of European cultural development; a history of continuous submission to foreign and frequently unfriendly powers since the beginning of the recorded history of this area; and perhaps also the lack of peculiar natural riches.

Historical Background[1]

Most, if not all, of Ruthenia, according to the earliest records, was a part of the Great Bulgarian Empire which comprised the whole eastern portion of what later became Hungary. The inhabitants were Bulgarian Slavs. In the beginning of the eleventh century after Carpathia was added to Hungary, the Slav population was gradually eliminated through the onslaught of the Magyars. Definite evidence of Ruthene colonization exists from the beginning of the thirteenth century. The Carpathian Mountain districts were colonized only as late as the thirteenth or fourteenth century and to some extent even later.

In the sixteenth and seventeenth centuries for about 150 years eastern Ruthenia was part of Transylvania, a country under Turkish influence, until it was permanently restored to the House of Hapsburg in 1696.

With the revolutions of 1848, Ruthenia, for a brief period only, became a special district with a Ruthenian commissioner. Russian troops arrived in 1849 to aid in putting down the Magyar Revolution. Their presence gave origin to a strong pro-Russian feeling which from then on became the distinguishing feature of all intellectual move-

[1] This section is adapted largely from KROFTA, KAMIL. RUTHENES, CZECHS AND SLOVAKS. Slavonic and East European Rev. 13: 363–371; 611–626. London. 1935.

ments. In 1867 Ruthenia was again subjected to the harsh policy of Magyarization. The population suffered from bad economic and social conditions, which left them too little land to supply their nourishment, whereas the major part of the area was divided up into large estates. For this reason many Ruthenes emigrated to America.

From these emigrants to America also came the incentive for the creation of an autonomous Ruthenia. A resolution to this effect was submitted by the Ruthene National Council of America to President Wilson on October 21, 1918. The members of the peace conference decided to incorporate Ruthenia as an autonomous State in the newly formed Czechoslovak Republic. This decision was sealed in the Treaty of St. Germain on September 10, 1919. The autonomous status promised was never fully attained. The central government argued that "the task of self-rule was too novel and they could hardly yet be expected to cope with it."

Agriculture

The agricultural economy of Ruthenia suffers from too many people (66 percent of the population) on too little land. This is made clear by the large proportion of land in forests, meadows, and pastures and land not in cultivation as against the small area, 18.8 percent, of arable land (table 2). For every person there was 0.74 acre of arable land in Ruthenia as against 0.96 acre in Czechoslovakia as a whole, or one-fourth less. For every person living on agriculture there were only 1.28 acres and 2.97 acres, respectively, or less than half the area of arable land. The consequences of this relationship between man and land are obvious. Almost anything else that can be said about this country's agricultural economy is in large measure an elaboration of this point.

TABLE 2.—*Land use in Ruthenia and Czechoslovakia, 1937*

Land use	Ruthenia		Czechoslovakia		Ruthenia as percentage of Czechoslovakia
	1,000 acres	*Percent*	*1,000 acres*	*Percent*	*Percent*
Arable land	591	18.8	14,466	41.7	4.1
Permanent pastures	360	11.5	3,130	9.0	11.5
Truck gardens	17	.6	255	.7	6.7
Vineyards	11	.4	64	.2	17.7
Pastures	423	13.5	2,631	7.6	16.1
Willow groves	4	.1	23	.1	17.9
Forests	1,454	46.4	11,334	32.6	12.8
Fish ponds	(1)		115	.3	.1
Other water areas (incl. lakes and marshes)	27	.8	212	.6	12.6
Parks and amusement gardens	1		89	.3	1.6
Other areas (built up, and other unprod. areas)	147	4.7	2,057	5.9	7.2
Areas as yet not surveyed	100	3.2	343	1.0	29.0
Total	3,135	100.0	34,719	100.0	9.0

[1] Less than 500 acres.

RÉPUBLIQUE TCHÉCOSLOVAQUE. ANNUAIRE STATISTIQUE. 1938. See p. 38.

TABLE 3.—*Number and acreage of farms in Ruthenia and Czechoslovakia, according to size, 1921 and 1930*

Country	Year of census	Farms	Under 2.5 acres	2.5 to 12.5 acres	12.5 to 25 acres	25 to 75 acres	75 to 250 acres	250 acres and over
		1,000's	*Percentage of farm units*					
Ruthenia	1921	86	19.9	54.1	16.1	8.3	1.1	0.5
	1930	113	21.9	53.1	16.4	7.1	.8	.7
Czechoslovakia	1921	1,613	31.9	41.7	13.7	10.8	1.4	.5
	1930	1,649	28.1	42.7	15.7	11.4	1.5	.6
		1,000 acres	*Percentage of agricultural area*					
Ruthenia	1921	1,151	1.9	24.4	19.3	21.1	8.1	25.2
	1930	1,483	1.9	24.1	20.1	17.9	5.9	30.1
Czechoslovakia	1921	20,188	2.9	20.1	17.7	30.4	10.0	18.9
	1930	20,944	2.3	20.8	19.9	31.1	10.4	15.5

Official statistics.

SIZE OF FARMS

Ruthenia's farms are predominantly of dwarf and small sizes (table 3). In fact, establishments up to 25 acres comprised over 91.4 percent of all farming units (census 1930). In the Republic as a whole 86.5 percent were in that category. Medium-sized farming units accounted for 7.9 versus 12.9 percent, respectively, holding 23.8 and 41.5 percent of the total agricultural area. The high proportion of small units, despite extensive farming methods, and the small number of medium-sized farms are the result of the pressure of the population on the land, a high birth rate, and the difficulty experienced in finding other employment. Thus, also, despite the land reform, which was begun in the early twenties, the number of dwarf holdings (up to 2.5 acres) increased in Ruthenia, whereas in all other Provinces their proportion was considerably reduced.

AGRICULTURAL REGIONS AND TYPES OF FARMING

Czechoslovakia as a whole is commonly divided into four regions of agricultural production. These are most easily distinguished by differences in altitude. The "sugar-beet area" in the lowlands is followed by the so-called "grain area" above 1,500 feet in altitude and by the "grain-potato region" (up to the height of 2,300 feet) and finally the highest zone characterized chiefly by meadows and pastures, the so-called "fodder area."

Ruthenia partakes, according to this standard classification, of only two of the regions, the fodder and the grain areas. The intensity of agricultural operation decreases from the intensive sugar-beet area to the extensive fodder crops. Simultaneously there is a gradient of intensity from west to east, being lowest in Ruthenia, a fact which must be ascribed to the lesser technical advance and the generally poor economic condition of the population. To illustrate this point, according to the data of the Institute of Agricultural Accountancy and Economics for 1936, gross receipts per acre of agricultural area were only 2,721 crowns [2] in Ruthenia against 6,598 crowns in all Czechoslovakia and working expenses, 2,231 and 4,863 crowns per acre.

In the fodder areas of Ruthenia the peasants still live in a self-sufficient economy; their clothing and tools are almost wholly self-produced. Mountain-field cultivation of oats, rye, potatoes, and flax, and in the lower regions also some wheat and corn are their main crops, grown entirely for household use. The greater portion of their income, however, is derived from sheep and cattle husbandry; the excellent highland pastures or *poloninas* of Ruthenia have become the breeding areas of cattle for use in the low-lying districts. Wood cutting and floating, work in the mills, and game hunting provide insufficient auxiliary employment. As this type of farming supplies too little food, especially grain, for even family needs, the mountaineers before the separation of Ruthenia from Hungary used to descend into the Hungarian lowlands and earn their livelihood as field workers during the summer in order to live in the winter on wages received in kind.

Forms of crop rotation vary with altitude. On the lowest and most easily accessible land, the three-field system is practiced. In higher places and where precipitation is plentiful the field-grass system is used; potatoes are followed by spring rye or oats, and in the third year the field is left to be covered by grass for pasture or meadow for 5 years. Soils in higher altitudes are used in a two-field system of alternating oats and fallow. These fields are never manured. Still higher are usually communal pastures followed by mountain meadows producing one cut of hay (700–900 pounds per acre), which is brought to the valley on sleds in the winter. The highest areas, or Alms, serve largely for sheep grazing.

[2] One Czech crown was equivalent to $0.040078 (1936 average).

The type of farming found in the lowlands practices an improved three-field rotation. Still grain frequently follows grain, and too much land is in fallow and too little fodder is grown. Typical rotations in Ruthenia are: 1, wheat; 2, rye; 3, barley; 4, fodder; 5, corn; or 1, corn; 2, barley; 3, rye; 4, corn or feed crop; 5, barley; 6, clover. Tobacco and other industrial crops, as well as fruit trees, are found on the farms in this region. Because of the tremendous distance from the major consuming centers of the country—the distance to Prague is greater than that from Cincinnati to Washington—the prices the Ruthenian farmer receives for his produce are the lowest in the country. On the other hand all his supplies cost him more dearly. There is little mechanization of agriculture or use of artificial fertilizer.

MAJOR CROPS

With the exception of hops and sugar beets, the latter grown only in negligible quantity, Ruthenia's crops are the same as those of Czechoslovakia, although not produced in the same proportions. (See table 4.) The ratio of the arable land (including commercial gardens) of the two areas, 4.1 percent, forms the dividing point between crops grown proportionately more or less than in the

TABLE 4.—*Average crop area, production, and yield per acre of major crops in Ruthenia and percentage these represent of Czechoslovakia, 1933–37*

Commodity	Crop area		Production		Yield per acre	
	Acreage	Percentage of Czechoslovakia	Volume	Percentage of Czechoslovakia	Amount	Percentage of Czechoslovakia
	Acres	*Percent*	*Sh. tons*	*Percent*	*100 lbs.*	*Percent*
Wheat (incl. spelt)	84,321	3.7	45,551	2.6	10.8	70
Rye	64,397	2.6	32,168	1.8	10.0	69
Barley	8,844	.5	3,557	.3	8.0	53
Oats	72,341	3.8	28,801	2.0	8.0	54
Maslin	1,366	8.8	707	6.4	10.4	73
Corn, pure culture	24,400	11.8	13,648	7.9	11.2	66
Corn, in mixed culture	94,799	54.2	47,140	47.9	9.9	88
Millet	423	7.2	158	5.1	7.5	71
Buckwheat	208	4.2	65	3.1	6.2	75
Total cereals	351,099	4.0	171,795	2.7	9.8	66
Total pulses	85,451	30.5	9,107	10.8	[1] 2.1	[1] 36
Potatoes	106,848	5.7	425,271	4.0	79.6	69
Sunflowers [2]	62,578	87.0	[3] 5,235	86.3	1.7	100
Rape and colza	72	.9	40	.8	11.1	88
Hemp, fiber	4,270	23.4	1,345	22.0	6.3	95
seed	4,270	23.4	880	21.5	4.1	92
Flax, fiber	796	2.4	178	2.2	4.5	89
seed	796	2.4	121	1.9	3.0	77
Tobacco	[4] 9,968	40.4	[5] 3,627	22.8	7.3	57

[1] Underestimated because of larger area under mixed cultivation in Ruthenia.
[2] Grown mostly in mixed cultivation.
[3] 4-year average, 1934–37.
[4] 4-year average, 1933–36.
[5] 2-year average, 1934–35, for Ruthenia; 3-year average, 1934–36, for Czechoslovakia.
Based on official sources.

State as a whole. Ruthenia has roughly the same proportion of its arable land devoted to grains; much more to pulses, sunflower, tobacco, hemp; and somewhat more to potatoes and such minor crops as melons, pumpkins, and garlic. Of the grain area, corn occupies over 20 percent. It has more winter barley and summer rye; more maslin, millet, and buckwheat; but less of everything else. In contrast to the whole State, wheat in Ruthenia exceeds rye in area.

As the yields per unit of area are mostly less than two-thirds of those of Czechoslovakia, the portion of crop production which this Province contributed to the total crop is small indeed. Ruthenia, with 5.3 percent of the country's population and a much larger share, about 11 percent, of the agricultural population, produced only 2.7 of all grains and 4.2 percent of the potatoes.

Of the crops in which this Province specializes, corn is most important but production is hardly enough to meet local needs. Hemp cultivation is found in subsistence farming and is grown for the farmer's own use. With greater industrialization, the area under hemp and also flax receded in Czechoslovakia in favor of cheaper raw materials imported from abroad. Up to World War II, a similar reduction was experienced in oilseeds in the whole State. Because of cheaper labor and lower production costs and farm consumption, the reduction was least in Ruthenia where sunflower oil is used in part for ritual purposes. Tobacco cultivation, administered by a tobacco monopoly, has shown a continuous rise since World War I. Natural conditions favor its growth, and it is one of the few agricultural products that Ruthenia could sell at a profit to the western Provinces.

Ruthenia has almost 20 percent of the country's vineyards. The vineyards are concentrated in the valley of the Tisa in the districts of Berehovo, Uzhorod, and Mukacevo. Wine production per acre is larger than that of any of the other Provinces, and it is noteworthy that this is the only agricultural branch in which Ruthenia tops all other Provinces in yields per unit of area.

TABLE 5.—*Livestock numbers in Ruthenia and Czechoslovakia, January 1, 1938*

Kind	Ruthenia	Czechoslovakia	Ruthenia as percentage of Czechoslovakia	Per 1,000 inhabitants [1]	
				Ruthenia	Czechoslovakia excl. Ruthenia
	Thousands	*Thousands*	*Percent*	*Number*	*Number*
Cattle	232	4,938	4.7	285.2	325.7
Cows	112	2,560	4.4	137.6	169.4
Hogs	74	3,612	2.0	90.6	244.9
Breeding sows	19	518	3.7	23.4	34.5
Sheep	110	644	17.1	134.8	36.9
Goats	27	1,114	2.4	32.7	75.3

[1] Population in 1938: Ruthenia 814,600; Czechoslovakia 15,265,000 (excl. Ruthenia 14,450,400).

L'OFFICE DE STATISTIQUE DE LA REPUBLIQUE TCHÉCOSLOVAQUE. RAPPORTS. Série F, Nos. 9–10, 1938. See p. 469.

Of fruits for which natural conditions are favorable in the Carpathian foothills, Ruthenia produced, in 1936, 121,253 short tons of apples and pears (7.7 percent of the State's production), 133,378 tons of stone fruits (4.3 percent), and 9,435 tons of nuts (10 percent). The fruit is not uniform enough to command a good price.

LIVESTOCK

Despite the large area in meadows and pastures (25 percent versus 16.6 percent in the whole State), Ruthenia has less livestock per agricultural area and population than the remaining country, with the exception of sheep (table 5), which are, relative to the population, almost four times as numerous. Least in number are hogs, of which there were only 9 per 100 inhabitants against 24 in the rest of the country. Livestock weights are generally lighter, but despite the lower meat production considerable numbers of cattle were sold to the markets in the west. The feed basis is formed by hay and green fodder, of which Ruthenia has more per animal than the rest of the country, but there is a shortage of root crops and grain and protein supplements for feeding. The imported feed materials benefit only the west.

In 1933 there were in Ruthenia 41,565 horses, or 2.8 per 100 acres of agricultural land, against 3.3 in the whole country. Remarkable is the large number of horses on farms up to 12.5 acres in size,

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where the horse actually displaces the cow. In the west the number rises with farm size. One and a half million head of poultry, in 1936, were less than 4 percent of Czechoslovakia's total.

Food

From the comparisons with Czechoslovakia, a country almost wholly self-sufficient in food, Ruthenia is definitely a food-deficient country, even though its dietary standards are low. Because the Province had no separate trade statistics, it was not possible to evaluate quantitatively its total or per capita food consumption. A tentative computation of food supplies from domestic resources indicates that this region was only about two-thirds to three-quarters self-sufficient in food. The distribution of calories over the various foodstuffs was weighted heavily on starchy foods, grains, potatoes, and pulses.

Only a clue to the actual total consumption pattern of Ruthenia can be found in the consumption surveys among independent agriculturists conducted by the Institute for Agricultural Accounting and Economics of Czechoslovakia. (See table 6.)

The agriculturist of Ruthenia had, according to the sample (only 20 families were surveyed), a low consumption of meats, eggs, and fats, but a high intake of legumes and potatoes. His diet, largely vegetarian, was derived mainly from his own establishment. He consumed considerable quantities of milk and sheep cheese. The very small consumption of sugar results from high prices and the food habits of the population, which uses hardly any coffee, tea, or sweets. Even total energy intake by farm families in Ruthenia was measurably less per capita than in Bohemia, Moravia, and Silesia.

The inference to be drawn from this survey on the general diet of all Ruthenians is that large quantities of grain and all the sugar were normally imported; some meats and fats were exported. Even so, the diet was generally poor in composition and probably inadequate in quantity.

TABLE 6.—*Annual consumption of food per capita by families of independent agriculturists in specified areas, 1936*

Commodity	Unit	Bohemia, Moravia, and Silesia	Slovakia	Ruthenia
Flour and grain products [1]	pound	437	390	373
Rice	do	5.7	6.4	9
Potatoes	do	326	357	569
Sugar	do	45.0	22.3	5.3
Meat	do	93.7	67.2	30
Fats	do	34.8	24	18.7
Milk	do	617	516	534
Cheese	do	.4	2	4.9
Eggs	number	162.8	103.4	86.1
Total calories from above foodstuffs per day [1]		3,290	2,740	2,640

[1] The figure for flour and grain products includes bread, pastry, etc., baked at home. Since the figure appears too high in terms of flour, possibly some of the bread items may be included, not in terms of flour, but in terms of bread. Lack of information on this point makes it hazardous to calculate total calorie intake from the foodstuffs enumerated. For purposes of comparison only, and not to indicate a precisely calculated total calorie intake, it has been assumed that roughly half the flour item was given in terms of bread.

L'INSTITUT DE COMPTABILITÉ ET D'ÉCONOMIE RURALES DE LA REPUBLIQUE TCHÉCOSLOVAQUE. RAPPORTS. No. 1. 1938.

Conclusion

What has Czechoslovakia gained or lost by the transfer of Ruthenia to the Soviet Union? This question is not easy to answer in the absence of a complete balance of payments between Ruthenia and the rest of Czechoslovakia. Certainly, however, Czechoslovakia is losing a small fraction of its land, an even smaller portion of its population, and probably very little capital as, according to reports, this area suffered heavy damage during World War II. On the credit side, Czechoslovakia has rid itself of a problem area, from which it received little, and into which it would have had to sink large capital investments for many years to bring it nearer the economic and social level of the western Provinces. The new Czechoslovakia, in terms of prewar statistics, will have through the loss of Ruthenia a higher average income per person, greater food self-sufficiency, a smaller portion of its population in agriculture, and lower birth and death rates, although all by only a very small percentage. Shorter communication lines and the elimination of a nationality and language problem may also prove advantageous.

Russia's gain in land and people is so minute in face of the size of the Soviet Union that it hardly justifies discussion. Russia's need for labor in its reconstruction, however, may draw off some of the surplus population, thereby probably benefiting Ruthenia at the same time. The possession of Ruthenia, sometimes called the "peephole of Central Europe," provides the Soviet Union with a toehold on the Hungarian plain and at the same time has brought all Ruthenians or Ukrainians (Polish, Czech, and Soviet) under its domination, a circumstance which may have considerable political significance.

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